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Research paper

Six-year healthcare trajectories of adults with anxiety and depressive disorders: Determinants of transition to specialised mental healthcare

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ABSTRACT

Background: To investigate potential facilitators and barriers for patients receiving specialised mental healthcare using a longitudinal design.

Methods: Longitudinal data on 701 adult participants with a depressive and/or anxiety disorder were derived from the Netherlands Study of Depression and Anxiety (NESDA). Demographic, clinical and treatment determinants at baseline were assessed with self-report questionnaires and the Composite International Diagnostic Interview (CIDI 2.1). Transition to specialised mental healthcare was assessed at one, two, four, and six-year follow-up with a self-report resource use questionnaire (TiC-P).

Results: 28.3% of patients with a depressive and/or anxiety disorder transitioned from receiving no care or primary mental healthcare to specialised mental health services during six-year follow-up. The multivariate Cox regression model identified suicidal ideation, younger age, higher education level, openness to experience, pharmacological treatment, prior treatment in primary mental healthcare and perceived unmet need for help as determinants of transition, explaining 8–18% of variance.

Limitations: This study focused on baseline determinants of future transition to specialised mental healthcare. Recovery and remittance of depression and anxiety in relation to transition were not studied.

Conclusions: Not all key clinical guideline characteristics such as severity of symptoms and comorbidity were predictive of a transition to specialised mental healthcare, while non-clinical factors, such as age and perceived unmet need for help, did influence the process.

1. Introduction

Major depressive disorder (MDD) and anxiety disorders are highly prevalent and severely disabling, especially when persisting over time (Demyttenaere et al., 2004; Kessler et al., 2015, 2005; Ten Have et al., 2013a, 2013b). A substantial number of people with severe symptoms of depression and/or anxiety do not receive adequate treatment (Kohn et al., 2004), with estimates ranging between 30% and 50% (Harvey and Gumport, 2015; Piek et al., 2011; Spijker et al., 2013; Ten Have et al., 2013a, 2013b).

In the Netherlands, most people who suffer from depression and/or anxiety initially go to their general practitioner (GP), who can provide counselling or pharmacotherapy. This can be supplemented with short-term out-patient psychotherapy (5–10 sessions) in primary care, provided by social workers, social psychiatric nurses, public health nurses or psychologists (Piek et al., 2011; Spijker et al., 2013; van Balkom et al., 2013). In case of severe mental health problems, patients can be referred to specialised mental healthcare. Compared to primary care, specialised treatment is usually characterised by a more multidisciplinary approach and longer treatment duration. Treatment can consist of individual sessions, group-therapy, day-treatment or in-patient care, and is most often provided by psychiatrists, psychotherapists or psychologists.

According to formal clinical guidelines, referral to specialised mental healthcare can be made by a GP, company doctor or medical specialist. Criteria for referral are an inadequate treatment response to the first steps of primary mental healthcare, comorbid disorders, complex or severe symptoms such as suicidal behaviour, or chronic or

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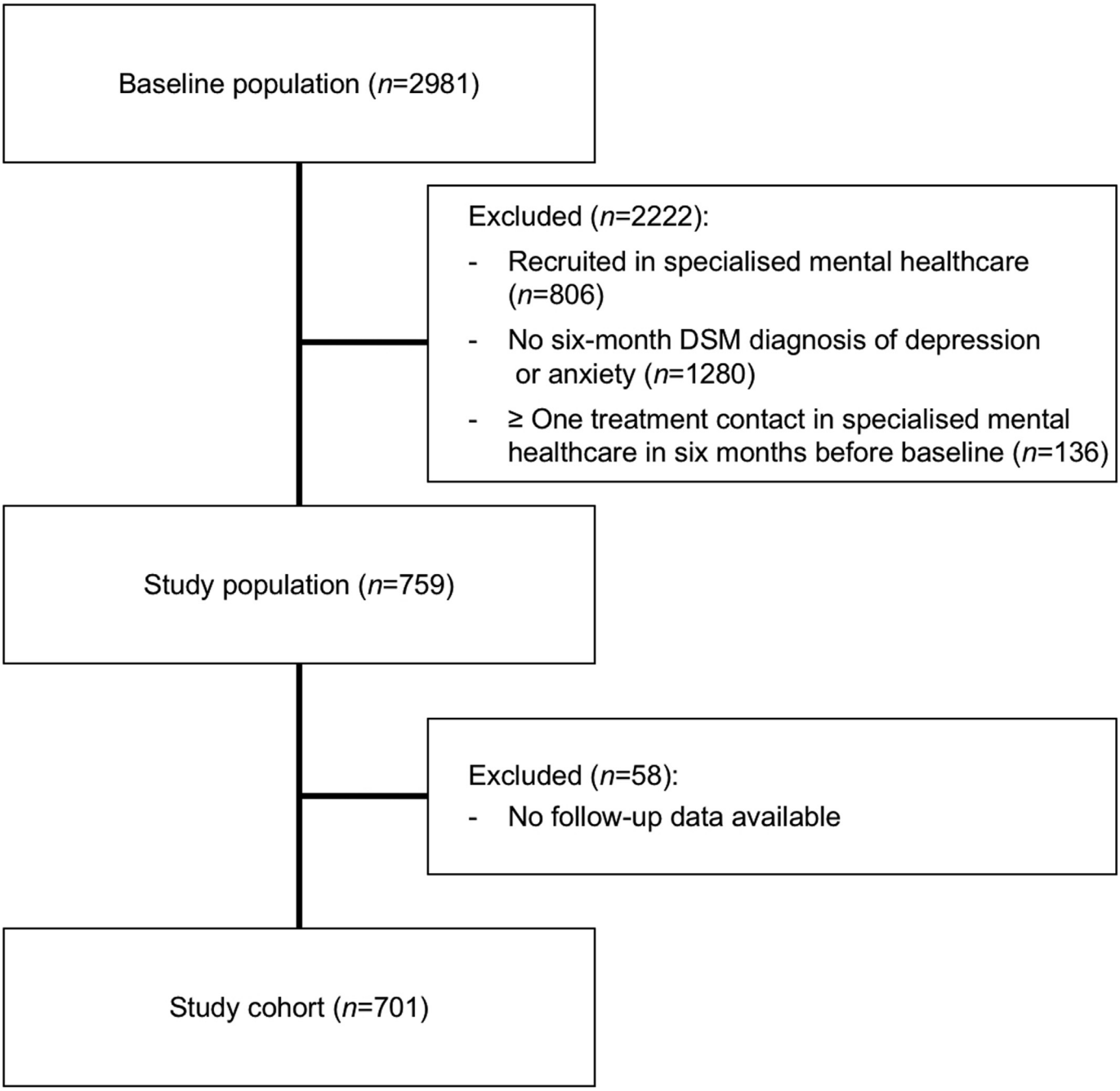

Fig. 1. Flow-chart for the selection process of the study cohort.

recurring episodes (National Institute for Health and Care Excellence, 2011; Piek et al., 2011; Spijker et al., 2013; van Balkom et al., 2013; van Hemert et al., 2012).

In order to better understand why some patients do not receive adequate care, even though effective treatment is available, it is important to identify the barriers and facilitators for people receiving mental healthcare. This provides healthcare professionals with valuable information on which people are at risk of not getting the services they require and ought to be followed up more thoroughly.

Previous cross-sectional research, examining the characteristics of patients in specialised mental healthcare, showed that patients with more severe or chronic symptoms were more likely to receive some form of specialised mental healthcare (Harris et al., 2015; Piek et al., 2011; ten Have et al., 2013a, 2013b; Verhaak et al., 2009; Wang et al., 2007b, 2007a).

Other factors may also play an important role in the referral process. For example, GP's confidence in their ability to detect mood and anxiety disorders was shown to decrease the probability of referral to specialised services, while perceiving more barriers for guideline implementation increased the probability (Smolders et al., 2010). Concerning patients' demographic characteristics, several cross-sectional studies found that females, highly educated individuals, people between 30 and 50 years old, and individuals without a paid job more often receive specialised mental healthcare (Alonso et al., 2004; Bijl and Ravelli, 2000; Harris et al., 2015; Kohn et al., 2004; ten Have et al., 2013a, 2013b). Low perceived need for help was found to be an important reason for not receiving treatment, even when the financial consequences of receiving care were minimal and when symptom severity was high (Andrews et al., 2001).

Overall, it is still largely unclear to what extent formal clinical

guidelines explain which patients receive specialised mental healthcare, and which other, non-clinical, patient characteristics contribute to this process. The current study expands on previous cross-sectional studies by employing a longitudinal design. The central aim of this study is to examine which depressed or anxious individuals transition to specialised mental healthcare during a six-year timeframe. Various potential determinants of transition are examined, including clinical characteristics, demographic characteristics, prior treatment history and perceived unmet need for help. Examining a broad range of determinants provides the opportunity to establish whether guidelines are followed, and to assess which other factors play a role in the processes of referral and receiving help.

2. Material and methods

2.1. Study sample

Participant data were derived from the Netherlands Study of Depression and Anxiety (NESDA), an on-going longitudinal cohort study investigating the determinants, long-term course and consequences of depressive and anxiety disorders (Penninx et al., 2008). At baseline, the total NESDA sample consisted of 2981 adults (18–65 years old) that were included between 2004 and 2007. Follow-up assessments took place after one, two, four, and six years. A detailed overview of the NESDA design and procedures can be found elsewhere (Penninx et al., 2008).

NESDA included participants from different healthcare settings and recruited people in various stages of depressive and/or anxiety disorders. Participants were either healthy controls (26%) or fulfilled the DSM-IV-TR criteria (American Psychiatric Association (APA), 2000) for a current or remitted depressive disorder (Major Depressive Disorder or Dysthymia) and/or an anxiety disorder (Social Phobia, Generalised Anxiety Disorder, Agoraphobia, and Panic Disorder with or without Agoraphobia) (74%).

Participants were recruited from the community (19%), primary care (general practice, 54%) and specialised mental healthcare settings (27%), thus representing different healthcare populations. Participants with a primary diagnosis of other severe disorders, such as a psychotic, obsessive-compulsive, bipolar, or severe addiction disorder were excluded from study participation. NESDA was approved by the Ethical Review Board of the VU University Medical Centre and by the local review boards of all participating centres. All participants provided written informed consent. Fig. 1 illustrates the selection process of the study cohort for the current study.

The study focused on participants who fulfilled the criteria for a depressive disorder, an anxiety disorder or a comorbid depressive and anxiety disorder in the six months prior to baseline assessment (DSM-IV-TR) (American Psychiatric Association (APA), 2000) who were recruited in the general population or in primary care (n = 895). Diagnoses were determined with the Lifetime Composite International Diagnostic Interview (CIDI) version 2.1 (World Health Organisation (WHO), 1997). As the study aimed to assess long-term determinants of participants transitioning to specialised mental healthcare, participants who already received specialised mental healthcare at baseline were excluded from the study sample. Data on mental healthcare was available for the six months prior to baseline, via the self-report Trimbos/iMTA questionnaire for costs associated with psychiatric illness (TIC-P) (Hakkaart-van Roijen et al., 2002), matching the six-month DSM diagnosis. Excluding participants that reported one or more treatment contacts in specialised mental healthcare prior to baseline led to a sample of n = 759. Fifty-eight participants were excluded from data-analysis because of missing data on all follow-up assessments, bringing the total study cohort to n = 701.

2.2. Transition to specialised mental healthcare

The primary outcome variable *transition to specialised mental healthcare* was defined as three or more visits within one follow-up period to a specialised mental healthcare centre, an independent psychiatrist or psychotherapist, and/or a centre specialised in treatment of alcohol or drug abuse or dependence. In order to receive specialised care, patients first require a formal referral by a GP, company doctor or medical professional. Transition can take place either from primary mental healthcare to specialised mental healthcare, or patients can surpass primary care and transition directly to specialised care. The cut-off of three visits was based on the assumption that in Dutch specialised mental healthcare the first two sessions are generally focused on the diagnostic phase, with specialised treatment starting from the third session onwards. Information on use of mental healthcare was derived from the TIC-P (Hakkaart-van Roijen et al., 2002), which assessed (mental) healthcare contacts with various healthcare professionals during each follow-up period. The TIC-P was administered one, two, four, and six years after baseline. Time of event (transition to specialised mental healthcare) was recorded as the first follow-up year at which participants reported having had three or more specialised mental healthcare contacts since their last assessment.

In order to gain insight into the amount of specialised mental healthcare transitioned participants received during each follow-up period, and the specific setting in which this took place, the number of participants that visited each specialised mental healthcare setting was examined, along with the mean number of contacts in each setting during each follow-up period. At one-year follow-up, only information on the combined number of visits to an independent psychiatrist and/or psychotherapist was available. For two, four, and six-year follow-up, information could be presented separately.

2.3. Determinants of time to transition to specialised mental healthcare

2.3.1. Demographic characteristics

The *socio-demographic characteristics* gender, age, years of education, total household net income per month (below modal ≤ €2400,- and above modal > €2400,-) (Prins et al., 2011a, 2011b; van Beljouw et al., 2010) and employment status (employed, unemployed) were assessed during the baseline interview.

2.3.2. Clinical characteristics

At baseline, the CIDI interview (version 2.1) (World Health Organisation (WHO), 1997) was used to assess whether participants fulfilled the *diagnosis of a depressive disorder* (Major Depressive Disorder or Dysthymia) and/or an *anxiety disorder* (Social Phobia, Generalised Anxiety Disorder, Agoraphobia, and Panic Disorder with or without Agoraphobia). In order to examine the predictive value of having a depressive disorder, an anxiety diagnosis, or a combined diagnosis of depression and anxiety, this information was coded into a three-level categorical variable, with depression diagnosis as the reference category. The CIDI diagnosis *Alcohol Dependency* was added as a separate determinant to further assess the impact of comorbidity.

In order to gain insight into the predictive value of duration of symptoms, both *symptom duration* and *age of onset* of the disorder were assessed. Age of onset of depressive and anxiety disorders was determined with the CIDI interview. When participants were diagnosed with comorbid anxiety and/or depressive disorders, the age of onset of the least recent disorder was used. Symptom duration was defined as the percentage of time participants had symptoms of depression, anxiety or avoidance in the four to five years prior to baseline. This was assessed with the Life Chart (Lyketsos et al., 1994) which was shown to be an adequate instrument (Denicoff et al., 1997; Honig et al., 2001). When participants reported experiencing symptoms in more than one domain, the domain with the highest percentage was used.

Severity of depressive symptoms in the two weeks prior to baseline

was assessed with the 30-item Inventory of Depressive Symptoms-Self Report (IDS-SR_{30}) (Rush et al., 1996, 1986). In order to assess *anxiety severity* in the week prior to baseline, the 21-item Beck Anxiety Inventory (BAI) (Beck et al., 1988) was used. Within the NESDA sample, Cronbach's alpha was 0.93 for both the IDS and BAI questionnaire. *Suicidal ideation* the week prior to baseline was measured in a semi-structured interview with the five-item Scale for Suicide Ideation (Beck et al., 1979). Participants were considered to have a heightened risk of suicide when they reported suicidal thoughts (a score of at least two out of three) on at least one out of the five items.

The *personality domains* agreeableness, neuroticism, conscientiousness, extraversion and openness to experience were measured with the 60-item NEO personality questionnaire (Costa and McCrae, 1995). Within the NESDA sample Cronbach's alpha ranged from 0.69 (openness) to 0.90 (neuroticism).

2.3.3. Prior treatment

The predictive value of *prior treatment received* was evaluated by assessing whether participants received primary mental healthcare and/or pharmacotherapy prior to baseline. Treatment in primary mental healthcare was measured with the TIC-P (Hakkaart-van Roijen et al., 2002) and was defined as at least three mental healthcare contacts in the six months prior to baseline with a GP, psychologist, social worker, and/or social psychiatric nurse. Assessment of pharmacotherapy was based on medication packages of all psychoactive medication participants used regularly for their depressive or anxious symptoms in the month prior to baseline. The medication was then rated by the interviewer, based on the World Health Organization Anatomical Therapeutic Chemical (ATC) classification system (World Health Organization Collaboration Centre for Drug Statistics Methodology, 2016). It included antidepressants (tricyclic antidepressants (ATC code N06AA), selective serotonin reuptake inhibitors (ATC code N06AB), other antidepressants (ATC codes N06AF, N06AG, N06AX) and benzodiazepines (ATC codes N03AE, N05BA, N05CD, N05CF).

2.3.4. Perceived need for help

Participants' perceived unmet need for help in the six months prior to baseline was assessed with the Perceived Need for Care questionnaire (PNCQ), which was found to have an acceptable reliability and validity for this type of study (Meadows et al., 2000). Participants specified whether they received help in the domains of (1) psycho-education and treatment information, (2) medicines and pills, (3) referral to a specialist, (4) psychotherapy and counselling, (5) practical support, and/or (6) skills training during the six months prior to baseline and indicated whether this matched their need. When participants reported that they did not receive help in a domain despite having a need for help, they were considered to have *an unmet need for help* in this domain. One continuous variable was created, indicating the total amount of domains in which participants had a perceived unmet need for help (range 0–6).

2.3.5. Statistical analyses

The probability of transitioning to specialised mental healthcare during follow-up (one, two, four, and six years after baseline) was examined with the Kaplan-Meier estimate. Cox's proportional hazard analyses were used to examine univariate and multivariate associations between time to transition to specialised mental healthcare and possible determinants. The following determinants were examined: (1) participants' socio-demographic characteristics (age, gender, education level, employment status and household income), (2) clinical factors (CIDI anxiety, depression and/or alcohol dependence diagnoses, age of onset, percentage of time during which participants had symptoms in past five years, personality domains, number of chronic somatic diseases under treatment, severity of depressive and anxiety symptoms and suicidal ideation), and (3) participants' mental healthcare prior to baseline (psychotropic medication and/or primary mental healthcare contacts) and perceived unmet need for help.

Subjects were right censored in the analysis at the last recorded follow-up or when they did not transition to specialised mental healthcare during the full six-year follow-up period. Time-point of event (transition to specialised mental healthcare) was recorded as the first follow-up at which the event occurred. Time was defined as 1, 2, 4 and 6, reflecting the follow-up time in years since baseline. Proportional hazards were verified in order to rule out interactions between time and the covariate levels. Predictor variables were examined for normality of sampling distribution, univariate outliers and multivariate outliers. Multicollinearity between predictors was checked by calculating the variance inflation factor (VIF; $1/(1\text{-}R^2)$) for each determinant variable in the multivariate model. Values over 2.5 were considered indicative of multicollinearity (Allison, 1999). The analysis was run with the rms function (Harrell, 2018) in R software (R Core Team, 2017).

Continuous variables were standardised, with a unit change reflecting a decrease or increase of one standard deviation. All Cox analyses were performed using the R survival package (Therneau, 2017). Predictors that were significant at $p = .20$ (two-tailed) were included in the multivariate model (Mickey and Greenland, 1989). In the multivariate model a significance level of $p < .05$ (two-tailed) was applied.

In order to examine the combined impact of all significant patient characteristics, a cumulative score was calculated from all determinants that were significantly related to transition to specialised mental healthcare. A logistic regression model was performed with transition as the dependent variable and number of determinants as the independent variable.

3. Results

3.1. Sample characteristics

Mean age of the total study sample was 44.4 years (SD 12.7, range 18–65). The sample consisted of more women than men ($n = 506$, 72.2%). At baseline, most participants were diagnosed with an anxiety disorder in the past six months ($n = 311$, 44.4%), 229 participants were diagnosed with both an anxiety and a depressive disorder (32.7%), and the remaining 161 participants (23.0%) were diagnosed with a depressive disorder. Table 1 provides an overview of differences in baseline demographic and clinical characteristics between participants who transitioned to specialised mental healthcare and participants who did not.

3.2. Transition to specialised mental healthcare

Over the course of six years, 198 out of 701 participants (28.3%) transitioned to specialised mental healthcare, reporting at least three contacts in a specialised mental healthcare setting. The slope of the survival curve suggests that most participants who transitioned to specialised mental healthcare did so during the first year after baseline ($n = 66$, 33.3%) or in the second year ($n = 58$, 29.3%). After four years, an additional 35 (17.7%) participants reported a transition to specialised mental healthcare, followed by 39 (19.7%) participants at six-year follow-up. Table 2 provides an overview per follow-up assessment of the number of transitioned participants that reported receiving treatment at each specialised mental healthcare provider (independent psychiatrist or psychotherapist, specialised centre and/or at a centre specialised in treatment of alcohol or drug abuse or dependence) and the mean number of contacts per follow-up.

3.3. Determinants

Univariate Cox regression analyses were used to assess predictive value for time to transition to specialised mental healthcare for (1) the

Table 1
Baseline characteristics of the study sample.

	Baseline characteristics		
	No transition $N = 503$	Transition to SMHC $N = 198$	Total $N = 701$
Demographics			
Age (mean ± SD)	45.3 (12.8)	42.1 (12.3)	44.4 (12.7)
Gender: Females (*n*, %)	367 (73.0)	139 (70.2)	506 (72.2)
In a relationship (yes, *n*, %)	352 (70.0)	125 (63.1)	477 (68.0)
Years of education (mean ± SD)	11.4 (3.2)	12.6 (3.5)	11.7 (3.3)
Employed (*n*, %)	424 (84.3)	163 (82.3)	587 (83.7)
Household income per month (*n*, %)			
Below modal (≤ €2400,-)	316 (45.1)	187 (26.7)	450 (64.2)
Above modal (> €2400,-)	134 (19.1)	64 (9.1)	251 (35.8)
Clinical characteristics			
Six-month diagnosis (*n*, %)			
Depression	111 (22.1)	50 (25.3)	161 (23.0)
Anxiety	232 (46.1)	79 (39.9)	311 (44.4)
Comorbid Depression/Anxiety	160 (31.8)	69 (34.8)	229 (32.7)
Age of onset (mean ± SD)	22.9 (13.6)	19.2 (11.4)	21.9 (13.1)
Symptom duration (mean ± SD)	45.0 (35.3)	46.6 (33.5)	45.5 (34.8)
Diagnosis alcohol abuse/ dependence (*n*, %)	146 (29.0)	78 (39.4)	224 (32.0)
Depression severity (mean ± SD)	24.5 (10.9)	28.6 (10.7)	25.7 (11.0)
Anxiety severity (mean ± SD)	14.2 (9.1)	16.1 (9.7)	14.7 (9.3)
Suicidal ideation in past week (*n*, %)	47 (9.3)	50 (25.3)	97 (13.8)
Personality characteristics (mean ± SD)			
Neuroticism	39.2 (7.3)	41.1 (6.5)	39.7 (7.1)
Extraversion	35.6 (6.7)	34.5 (6.5)	35.3 (6.6)
Agreeableness	43.1 (5.2)	42.9 (5.2)	43.0 (5.2)
Openness	30.7 (5.3)	32.5 (5.2)	31.2 (5.4)
Conscientiousness	37.1 (5.7)	35.9 (6.4)	36.8 (5.9)
# of somatic diseases (mean ± SD)			
No somatic disease	246 (48.9)	96 (48.5)	342 (48.8)
One somatic disease	167 (33.2)	67 (33.8)	234 (33.4)
Two or more somatic diseases	90 (17.9)	35 (17.7)	125 (17.8)
Psychotropic medication (*n*, %)	118 (23.5)	57 (28.8)	175 (25.0)
Primary mental healthcare (*n*, %)			
Three or more contacts	144 (28.6)	90 (45.5)	234 (33.4)
Unmet need for help (mean ± SD)	0.30 (0.78)	0.65 (1.00)	0.40 (0.87)

Note. SD: Standard Deviation; SMHC: Specialised Mental Healthcare.

demographic characteristics *age, gender, relationship status, years of education, employment status* and *income*, (2) the clinical baseline characteristics *depressive and/or anxiety disorder, age of onset of current diagnosis, symptom duration, comorbid alcohol dependence, depression and anxiety severity, suicidal ideation, the NEO personality domains* and *the number of chronic somatic diseases under treatment,* (3) *prior pharmacological treatment and primary care, and perceived unmet need for help*. Outcomes of univariate analyses can be found in Table 3.

Based on an alpha of 0.20, the baseline determinants *age, years of education, relationship status, age of onset, income level, alcohol dependence, depression severity, anxiety severity, suicidal ideation, neuroticism, extraversion, openness to experience, conscientiousness, pharmacological treatment, prior treatment in primary care*, and *unmet need for help* were included in the multivariate model (see Table 3).

Before running the multivariate model, multicollinearity between predictors was checked by calculating the variance inflation factor (VIF) for each determinant variable in the multivariate model. For depression severity a VIF score was found of 2.71, other determinants had a VIF score below cut-off (VIF < 2.5). Based on this finding, the multivariate model was performed both with and without depression severity as a determinant. Removing depression severity from the multivariate model did not impact the other outcomes. Therefore, depression severity was kept as a determinant in the multivariate model.

In the multivariate model, *age, years of education, suicidal ideation, openness to experience, pharmacological treatment, prior treatment in primary mental healthcare,* and *perceived unmet need for help* significantly predicted time to transition.

Participants who reported suicidal ideation, had a 1.9 times higher probability of transitioning than participants who did not have suicidal ideation ($\beta = 0.657$, $HR = 1.93$ 95% CI: 1.34 to 2.78, $p < .001$). Participants who reported more openness to experience, had a relative probability of 18% per standard deviation (SD = 5.3, $\beta = 0.162$, $HR = 1.18$ 95% CI: 1.00 to 1.38, $p = .05$). Participants who received pharmacological treatment at baseline had 1.45 higher probability of transitioning to specialised care ($\beta = 0.370$, $HR = 1.45$ 95% CI: 1.03 to 2.03, $p = .033$). Participants who received three or more mental healthcare contacts in primary care in the six months prior to baseline, had 1.55 higher probability of transitioning to specialised care ($\beta = 0.437$, $HR = 1.55$ 95% CI: 1.13 to 2.12, $p = .006$). Participants who had an unmet need for help, had a relative probability of 19% per standard deviation (SD = 0.87, $\beta = 0.173$, $HR = 1.19$, 95% CI: 1.06 to 1.34, $p = .004$). With each standard deviation increase in age the probability of transitioning decreased with 17% (SD = 12.7, $\beta = -0.189$, $HR = 0.83$, 95% CI: 0.70 to 0.98, $p = .030$). Participants who reported more years of education had a significantly increased probability of transitioning of 27% per standard deviation (SD = 3.3, $\beta = 0.242$, $HR = 1.27$, 95% CI: 1.09 to 1.49, $p = .003$). The predictive value of the set of determinants was $R^2 = 0.14$ (estimated 95% CI: 0.08 to 0.18, using R-square software (R Core team, 2017)).

Table 4 presents the odds of transitioning to specialised mental healthcare for subject groups with various risk profiles. In order to calculate the cumulative score, continuous variables were dichotomised based on median split: age (≥ 48 years old), years of education (≥ 11), openness of experience (≥ 26). For perceived unmet need for help, a cut-off of one domain or more was used.

Because only 39 participants did not have any significant determinants in their profile, participants with zero to one determinants were grouped together, and used as a reference group ($n = 144$). Compared to the reference group, the odds of transition did not significantly increase when participants had two determinants in their profile

Table 2
Overview of specialised mental healthcare received by transitioned participants: mean number of visits per follow-up.

		Specialised centre		Psychiatrist[2]		Psychotherapist[2]		Centre for alcohol/drugs	
Year	N^1	*n*	Contacts Mean (SD)	*n*	Contacts Mean (SD)	*n*	Contacts Mean (SD)	*n*	Contacts Mean (SD)
One	66	24	13.7 (22.1)	39	11.3 (5.5)	–	–	3	8.0 (4.9)
Two	58	36	20.2 (23.8)	7	12.4 (8.5)	13	13.4 (12.1)	2	11.5 (5.0)
Four	35	17	35.2 (34.9)	7	15.4 (18.4)	12	12.1 (9.3)	3	33.7 (29.7)
Six	39	23	16.9 (26.3)	7	17.4 (25.6)	11	23.0 (30.1)	2	16.0 (5.7)

Note. 1: Number of transitioned participants per follow-up. 2: Independent professional (not employed by a specialised mental healthcare centre). At one-year follow-up only information on the combined number of visits to an independent psychiatrist and/or psychotherapist was available.

Table 3
Hazard ratio's: relative probability for transition to specialised mental healthcare.

	Univariate analyses				Multivariate analyses (n = 689)		
	N	HR	95% CI	*p-value*	HR	95% CI	*p-value*
Demographics							
Age (mean ± SD)*	701	0.792	0.69; 0.91	**.001**	0.827	0.70; 0.98	**.030**
Gender: Females (*n*, %)	701	0.921	0.68; 1.25	.599			
In a relationship (yes, *n*, %)	701	0.783	0.59; 1.05	**.097**	0.903	0.65; 1.25	.538
Years of education (mean ± SD)*	701	1.319	1.15; 1.51	**<.001**	1.270	1.09; 1.49	**.003**
Employed (*n*, %)	701	0.886	0.62; 1.28	.514			
Household income per month (*n*, %)	701						
Below modal (≤ €2400,-)		Ref.					
Above Modal (> €2400,-)		0.819	0.61; 1.10	**.185**	0.857	0.72; 1.03	.379
Clinical characteristics							
Six-month diagnosis (*n*, %)	701						
Depression		Ref.					
Anxiety		0.808	0.57; 1.15	.238			
Comorbid Depression/Anxiety		1.004	0.70; 1.45	.982			
Age of onset (mean ± SD)*	697	0.777	0.67; 0.90	**.001**	0.863	0.61; 1.21	.099
Symptom duration (mean ± SD)*	694	1.030	0.90; 1.18	.668			
Diagnosis alcohol abuse/dependence (*n*, %)	701	1.460	1.10; 1.94	**.009**	1.185	0.88; 1.60	.266
Depression severity (mean ± SD)*	696	1.530	1.29; 1.82	**<.001**	1.329	0.99; 1.78	.055
Anxiety severity (mean ± SD)*	697	1.247	1.07; 1.45	**.004**	0.913	0.73; 1.15	.435
Suicidal ideation in past week (*n*, %)	701	2.616	1.90; 3.61	**<.001**	1.929	1.34; 2.78	**<.001**
Personality characteristics (mean ± SD)*							
Neuroticism	696	1.401	1.16; 1.70	**<.001**	0.971	0.74; 1.27	.830
Extraversion	696	0.854	0.73; 1.00	**.048**	0.985	1.00; 1.38	.883
Agreeableness	696	0.941	0.82; 1.09	.409			
Openness	696	1.305	1.14; 1.50	**<.001**	1.178	0.80; 1.21	**.046**
Conscientiousness	696	0.819	0.71; 0.95	**.007**	0.953	0.81; 1.13	.569
# of somatic diseases (mean ± SD)	701						
No somatic disease		Ref					
One somatic disease		1.024	0.75; 1.40	.880			
Two or more somatic diseases		1.004	0.68; 1.48	.983			
Psychotropic medication (*n*, %)	701	1.239	0.91; 1.69	**.172**	1.447	1.03; 2.03	**.033**
Primary mental healthcare (*n*, %)							
Three or more contacts	701	1.902	1.44; 2.52	**<.001**	1.548	1.13; 2.12	**.006**
Unmet need for help (mean ± SD)*	701	1.295	1.18; 1.43	**<.001**	1.189	1.06; 1.34	**.004**

Note. * Standardised for Cox regression analyses; SD: Standard Deviation; SMHC: Specialised Mental Healthcare. In bold: *p*-value significant (univariate: $a > 0.20$, multivariate: $a > 0.05$).

Table 4
Number of determinants present in participants per group and odds of transitioning to specialised mental healthcare.

# of determinants	No SMHC (n = 503) *n* (%)	SMHC (n = 198) *n* (%)	Total sample (n = 701) *n* (%)	Odds ratio (95% CI)
0–1	123 (24.5)	21 (10.6)	144 (20.6)	Ref
2	160 (31.8)	44 (22.2)	204 (29.1)	1.61 (0.92; 2.89)
3	132 (26.2)	55 (27.8)	187 (26.7)	2.44 (1.41; 4.35)**
4+	88 (17.5)	78 (39.4)	166 (23.7)	5.25 (3.06; 9.32)***

Note. SMHC: specialised mental healthcare. ** $p < .01$; *** $p < .001$.

(n = 204, *OR* = 1.61, 95% CI: 0.92–2.89, $p = .102$). The odds did increase significantly when participants had three (n = 187, *OR* = 2.44, 95% CI: 1.44–4.35, $p = .002$), or four or more determinants (*OR* = 5.25, 95% CI: 3.06–9.32, $p < .001$). This finding suggests there is a cumulative effect of the number of determinants present in patients' profiles, increasing the probability that participants transitioned to specialised mental healthcare.

4. Discussion

This longitudinal study examined possible determinants of participants with a current DSM-IV diagnosis of depression and/or anxiety transitioning to specialised mental healthcare over the course of six years. Out of 701 participants, 198 (28.3%) transitioned to specialised mental healthcare. Transition most often took place within two years after baseline (n = 124, 63%). In a multivariate model, younger age, years of education, suicidal ideation, openness to experience, prior pharmacological treatment and primary mental healthcare, and a perceived unmet need for help, significantly predicted time to transition. When participants' profiles included three or more determinants, the probability of transitioning to specialised care increased significantly.

4.1. Clinical profile and need for help

Participants who already received pharmacotherapy or primary mental healthcare at baseline, had an increased probability of transitioning to specialised services compared to participants who were not yet receiving one of these types of care. This finding seems to be in line with treatment and referral guidelines, which focus on a stepped-care approach and encourage healthcare professionals to refer patients who still experience symptoms after the first steps of mental healthcare (National Institute for Health and Care Excellence, 2011; Piek et al., 2011; Spijker et al., 2013; van Balkom et al., 2013). However, this explanation might be less relevant for participants who did not transition until four to six years after the baseline measurement. In addition, prior treatment could have been aimed at a diagnosis or problem other than depression or anxiety.

When participants reported that they did not receive help despite having a need for help (perceived unmet need for help), they had an increased probability of transitioning to specialised care. This is in line with prior research (Andrews et al., 2001). Possibly, participants who

were aware of their need for help were more inclined to start specialised treatment than participants who were not. Another explanation is that healthcare professionals take their patients' needs into account when determining mental healthcare trajectories. However, whether this was actually the case could not be examined in the current study.

In the current study, comorbid disorders, symptom duration and self-reported symptom severity lost their univariate predictive value within the multivariate model. This was unexpected, as these variables are also important referral criteria and prior cross-sectional research did suggest that individuals with more severe symptoms are more likely to receive mental healthcare (Ten Have et al., 2013a, 2013b; Verhaak et al., 2009; Wang et al., 2007a, 2007b). Part of this finding can be explained by the predictive value of suicidal ideation, as this is also a severity marker. In the NESDA sample for example, suicidal participants were shown to be more severely ill than participants with depression or anxiety who did not display suicidal ideation (Stringer et al., 2013). However, suicidal ideation was reported by a quarter of transitioned participants, indicating that three quarters of participants transitioned to specialised mental healthcare based on other criteria.

4.2. Demographic characteristics

The predictive value of age matched earlier studies (Alonso et al., 2004; Kohn et al., 2004), suggesting that persons who are older have a lower probability of transitioning to specialised mental healthcare than younger persons with a similar clinical profile. Even though age is not included in formal guidelines, it appears to be worthwhile for GPs to more closely monitor this older patient group.

In the current study, years of education also predicted transition to specialised mental healthcare independently of clinical severity characteristics, while controlling for other demographic variables such as employment and household income. More highly educated participants had a higher probability of transitioning to specialised services. Possibly, more highly educated individuals are better at voicing their needs and explaining their symptoms, thereby increasing their probability of referral.

4.3. Strengths and limitations

This study was, to our knowledge, one of the first to employ a longitudinal epidemiological design in order to assess the long-term mental healthcare trajectories of people with an anxiety and/or depressive disorder. Examining a broad range of determinants provides opportunity to examine which factors play a role in the process of referral and help seeking.

The current set of determinants does pose some methodological challenges, such as the determinant to event ratio, multiple testing and (multi)collinearity between determinants. To examine the precise individual contribution of determinants to the joint prediction, a larger sample would be required. As the number of events to determinant ratio decreases, the estimations become more biased. However, the determinant to event ratio (1:9) was close to the threshold of 1:10 that was suggested by Peduzzi and colleagues for proportional Hazard regression analyses (Peduzzi et al., 1995). Further, while collinearity was present, for all but one determinant (depression severity) the values were within the acceptable margin. Removing depression severity as a determinant from the multivariate model did not affect outcomes.

There are also some considerations, regarding sample selection and outcome measures, to be taken into account when interpreting the data. Future studies are advised to examine the extent to which participants experience stigma, because this could also have a major impact on mental health, identification of mental disorders and healthcare trajectories (Prins et al., 2011a, 2011b; Whiteford et al., 2013).

Participants and their mental healthcare professionals were not necessarily aware or in agreement that a mental disorder was present. This likely will have impacted transition to specialised care. In the current study this information could not be taken into account, because it was not available for all participants. A previous NESDA study examining patient records in the primary care sample, showed that GP's correctly recognised 69% of the depressed participants and 81% of non-depressed participants (Joling et al., 2011). This suggests that while identification rates by GP's were high, a substantial number of patients might have been under-diagnosed or over-diagnosed.

Participants were included when they did not receive specialised mental healthcare in the six-months prior to baseline, matching a six-month DSM diagnosis. No criterion could be added for specialised treatment before this time-period. Consequently, it is possible that, for a subgroup of participants, a return to specialised services was measured, rather than a first transition. Possibly, clinical profiles in this group differed from those of participants who did not receive specialised treatment before, for example in terms of symptom severity or duration. It would be interesting for future studies to examine the full mental healthcare trajectories over time, rather than to focus on one transition. Combined with specific information on type of treatment received, treatment response and remission rates, this could add to the knowledge on treatment availability and effectiveness. Also, an interesting next step in future research would be to examine the reasons for referral and transition to specialised mental healthcare according to both patients and healthcare professionals. In this context, a mixed-method approach could be considered. This could shed more light on barriers and facilitators for receiving mental healthcare.

5. Conclusions

Combining all information, the current study suggests that transition to specialised mental healthcare could only be partly explained by clinical characteristics that are included in official clinical referral guidelines.

The clinical characteristics suicidal ideation and prior treatment proved to be important determinants. However, other clinical factors such as comorbidity, symptom duration and symptom severity did not contribute to the probability of transition to specialised mental healthcare. Age, education level, openness to experience and perceived unmet need for help were related to transition to specialised services, even though these factors are not included in guidelines. Participants with combined profiles including three or more determinants, were shown to have an increased probability of transitioning to specialised mental healthcare. Groups that might be at risk of under-treatment according to the findings in this study are older adults and people with lower education. It would therefore be advisable for mental healthcare professionals to pay specific attention to these patients, making sure that they receive the services they require.

Declaration of interest

None.

Authors' contributions

BP is principal investigator of NESDA. LK, JW and JR collaborated in the design of this particular study. BP, HR and PvO critically revised the design. LK performed the statistical analyses and wrote the manuscript. JR supervised data analysis and the interpretation of the data. JW supervised writing of this manuscript. All authors commented on several drafts, as well as read and approved the final manuscript.

Author statement

All authors have seen and approved the final version of the manuscript being submitted. They warrant that the article is the authors' original work, has not received prior publication and is not under consideration for publication elsewhere.

Conflict of interest

The authors declare that there are no conflicts of interest.

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The funding source had no role in the design of this study, its execution, analyses, interpretation of the data, or decision to submit results.

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